

1 WHAT IS CLAIMED IS:

2 1. A method of processing feathers comprising the step of
3 reducing said feathers in a reducing apparatus selected from the
4 group consisting of at least one refiner, at least one pulper, and
5 combinations thereof.

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7 2. The method of claim 1 wherein said reducing apparatus
8 comprises a disc mill.

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10 3. The method of claim 1 wherein said reducing apparatus
11 comprises a high shear pulper.

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13 4. The method of claim 1 further comprising the step of adding a
14 cleaning agent to said feathers.

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16 5. The method of claim 4 wherein said cleaning agent is added to
17 said feathers such that said cleaning agent is present with said
18 feathers in said reducing apparatus.

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1 6. The method of claim 4 wherein at least a portion of said
2 cleaning agent is added to said feathers after said step of
3 reducing.

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5 7. The method of claim 4 wherein said cleaning agent is selected
6 from the group consisting of hydrogen peroxide, detergent, surface
7 acting surfactants, bleach and combinations thereof.

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9 8. The method of claim 4 wherein said cleaning agent comprises
10 hydrogen peroxide.

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12 9. The method of claim 4 wherein said cleaning agent comprises a
13 detergent.

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15 10. The method of claim 1 wherein a reduced feather material is
16 produced in said step of reducing and said method further
17 comprising the step of separating said reduced feather material
18 into a fiber material and a quill material.

1 11. The method of claim 10 wherein said fiber material and said
2 quill material are separated in said step of separating using at
3 least one hydraulic screen.

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5 12. The method of claim 10 wherein said fiber material and said
6 quill material are separated in said step of separating using at
7 least one centrifugal cleaner.

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9 13. The method of claim 10 further comprising the step of drying
10 said quill material in a high agitation dryer.

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12 14. The method of claim 1 wherein a reduced feather material is
13 produced in said step of reducing and wherein said method further
14 comprises the step of adding a bonding agent to at least a portion
15 of said reduced feather material.

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17 15. The method of claim 14 further comprising the step of forming
18 a product from said reduced feather material having said bonding
19 agent added thereto.

1 16. The method of claim 1 wherein a reduced feather material is
2 produced in said step of reducing and wherein said method further
3 comprises the step of forming a sheet product from said reduced
4 feather material.

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6 17. The method of claim 1 wherein a reduced feather material is
7 produced in said step of reducing and wherein said method further
8 comprises the step of forming a molded product from said reduced
9 feather material.

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11 18. The method of claim 1 wherein a reduced feather material is
12 produced in said step of reducing and wherein said method further
13 comprises the step of adding a reduced paper material to at least
14 a portion of said reduced feather material to form a combined
15 reduced material.

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17 19. The method of claim 18 further comprising the step of forming
18 a product from said combined reduced material.

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20 20. The method of claim 19 wherein said product is formed in said
21 step of forming using a sheeting process.

1 21. The method of claim 19 wherein said product is formed in said
2 step of forming using a molding process.

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4 22. The method of claim 21 wherein said molding process uses a
5 vacuum mold.

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7 23. The method of claim 18 further comprising the step of adding
8 a bonding agent to at least one of said reduced feather material,
9 said reduced paper material, and said combined reduced material.

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11 24. A reduced feather product produced by the method of claim 2.

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13 25. A reduced feather product produced by the method of claim 3.

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15 26. A reduced feather product produced by the method of claim 8.

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17 27. A reduced feather product produced by the method of claim 9.

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19 28. A sheet product produced by the method of claim 16.

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21 29. A molded product produced by the method of claim 17.

1 30. A sheet product produced by the method of claim 20.

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3 31. A molded product produced by the method of claim 21.

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5 32. A molded product produced by the method of claim 22.

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7 33. A method of processing feathers comprising the step of
8 reducing said feathers in the presence of a cleaning agent selected
9 from the group consisting of hydrogen peroxide, detergent, surface
10 acting surfactants, bleach, and combinations thereof.

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12 34. The method of claim 33 wherein said cleaning agent comprises
13 said hydrogen peroxide.

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15 35. The method of claim 33 wherein said cleaning agent comprises
16 said detergent.

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18 36. A method comprising the steps of:

19 (a) adding a reduced paper material to a reduced feather
20 material to form a combined reduced material and

21 (b) forming a product from said combined reduced material.

1 37. The method of claim 36 wherein said product is formed in said
2 step of forming using a sheeting process.

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4 38. The method of claim 36 wherein said product is formed in said
5 step of forming using a molding process.

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7 39. The method of claim 38 wherein said molding process uses a
8 vacuum mold.

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10 40. The method of claim 36 further comprising the step of adding
11 a bonding agent to at least one of said reduced feather material,
12 said reduced paper material, and said combined reduced material.

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15 41. A product formed by the method of claim 36.

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17 42. A sheet product formed by the method of claim 37.

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19 43. A molded product formed by the method of claim 38.

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21 44. A molded product formed by the method of claim 39.

1 45. A product formed by the method of claim 40.

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45. A product formed by the method of claim 40.